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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/092,819	03/07/2002	William P. Platt	H003001	7985

7590 01/22/2004

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EXAMINER

HANLEY, JOHN C

ART UNIT	PAPER NUMBER
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2856

DATE MAILED: 01/22/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/092,819	PLATT, WILLIAM P.	
	<b>Examiner</b>	<b>Art Unit</b>	
	John C Hanley	2856	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 17 October 2003.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-7,9-19 and 21-24 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-7,9-19 and 21-24 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 17 October 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All   b) ☐ Some \*   c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
- a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

### Attachment(s)

- |   |   |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____  |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) <u>20031017</u> . | 6) <input type="checkbox"/> Other: _____                                    |

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**DETAILED ACTION**

***Drawings***

1. The drawings were received on 10/17/03. These drawings are approved.

***Claim Rejections - 35 USC § 112***

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 1-7, 9-10, 15-19, 21 and 23-24 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The term "narrowband" is not specifically defined in the specification. Therefore, the metes and bounds of this limitation are vague and indefinite as a specific range of frequencies that applicant relies upon to distinguish over the prior art.

***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 1-7, 9-19, and 21-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over White in view of Hobbs. White shows a vibratory, MEMS-type gyroscope structure that measures angular rate using the Coriolis principle. On pages 50-52, White states, "Since the device has such a high Q,

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random noise in the system will excite the modes to some degree. This small motion will be picked up by the inner motor combs, and amplified by the motor loop, allowing the gyro to start with no external reference." Thus, the benefit of noise in the drive electronics of a gyroscope to improve startup time is clearly taught by White. White further teaches all of the structural details of the gyroscope recited in the claims, except that it lacks the specific teachings of purposely injecting noise into a gyroscope drive, centering the noise band around the fork tuning frequency, or the specified band limit of  $\pm 1000$  Hz around the tuning fork frequency to reduce startup time. Hobbs teaches to purposely inject a signal into the drive electronics of a tuning fork gyroscope at startup to speed startup. Hobbs shows the use of two different waves, i.e., a square wave, and a sine wave derived from the square wave by passing the square wave through a bandpass filter having a center frequency centered at a frequency approximately equal to the natural frequency of the drive mode of the tuning fork. The bandpass filter significantly attenuates the harmonic content of the square wave. Because Hobbs indicates that the "peak-to-peak voltage of the square wave results in a faster turn-on than the sine wave", it is chosen to be used instead of the sine wave at turn on. Hobbs also recognizes that the square wave has "a high harmonic content which can, in some instances, couple to higher order modes of the tuning fork structure and cause undesired bias shifts in the sensor output. The sine wave is relatively free of such harmonics, and it couples only to the fundamental drive frequency. However a sine wave rises more slowly and produces a slower turn-on than the square wave. Consequently, it is not as good for start-up operation." Therefore, Hobbs recognizes that a sine wave signal, bandpass filtered (more narrowband than square wave) around a center frequency near the natural frequency of the resonator, can be

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injected into its drive electronics to provide for startup, albeit a slower startup than a square wave. Hobbs recognizes that a square wave has undesirable harmonics, and therefore chose to provide a more complex system of switching between the two types of waves to obtain a faster startup than if using the sine wave alone. It would have been obvious to one skilled in the art at the time of applicant's invention to inject a bandpass (narrowband) filtered signal, centered around the natural frequency of the resonator, into the drive electronics of White to start the resonator in White, as taught and motivated by Hobbs, to provide a more simple startup circuit than Hobbs. The bandpass range of  $\pm 1000$  Hz recited in claims 11, 12 and 22 would have been further obvious to one of ordinary skill in the art, it being merely a parameter choice obtainable without undue experimentation, and selectable by variation of the parameter during design to obtain desirable operation based upon, for example, the "Q" of the particular resonator and the desired speed and stability of startup. Although Hobbs appears to teach away from the sine wave, he does so only to decrease startup time even further, at greater complexity. It is clearly obvious from Hobbs that a bandpass filtered sine wave can be used for startup.


Any inquiry concerning this communication or earlier communications from the examiner should be directed to John C Hanley whose telephone number is 703-305-5130 until his expected office move date of January 26, 2004, and 571-272-2195 thereafter. The examiner can normally be reached on M-F 9AM-5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hezron Williams can be reached on 703-306-4705. The fax phone number for the organization where this application or proceeding is assigned is 703-308-7722.

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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

JCH

A handwritten signature, possibly reading "JCH", in cursive script.A handwritten signature in cursive script, appearing to read "Hezron Williams", followed by a long horizontal line.

HEZRON WILLIAMS  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 2800